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BIOGRAPHICAL SKETCH
OF
DOCTOR ISAAC I. HAYES,
BY
GENERAL GEORGE W. CULLUM, U. S. ARMY,
VICE-PRESIDENT OF THE SOCIETY.

One short month had scarcely elapsed after the delivery of the foregoing brilliant and instructive lecture, when the sad tidings came to us that the distinguished Arctic explorer—Dr. Isaac Israel Hayes—had died of heart disease on Saturday morning, December 17, 1881. He was first attacked on Friday, but towards night had so far recovered that his friends had no fears for his life. A fatal relapse soon following, a physician was called in, who, upon applying his ear to the patient's heart, declared there was no hope of recovery.

Doctor Hayes was born, March 5, 1832, in Chester County, Penn. His parents, who were Quakers, after giving him a good elementary education, sent him to the University of Pennsylvania, from which he was graduated with the degree of M.D. in May, 1853, at the age of twenty-one. From boyhood he had evinced a passion for adventure, and even, five months before his graduation, had applied to Dr. Kane for permission to accompany him to the Polar Seas. On May 29, 1853, he secured the coveted appointment of surgeon in the second Grinnell expedition, with which he sailed the next day in the brig *Advance*, the former companion of the *Rescue* in the "Franklin Search" voyage under Lieutenant De Haven, United States Navy. Kane, after battling with the ice and reaching a more northerly latitude than any of his predecessors had yet attained by water, took up his winter quarters, September 9, 1853, in Rensselaer Harbor. Nothing of special importance, except short excursions on the ice, with the thermometer ranging from 60° to 75° below zero, took place until May 18, 1854, when Dr. Hayes and William Godfrey, with a dog-sledge, proceeded across the ice on Smith Sound to the west shore, as far as latitude 79° 45' and

longitude $69^{\circ} 12'$ west. After identifying the position of Cape Frazer, they returned to the *Advance*, of whose entire crew of seventeen only five then remained sound and well. The next tour of duty devolved upon Morton, who, on June 24th, climbing to a height of 480 feet at Cape Constitution, saw an "Open Polar Sea" (since shown to be Hall's basin at the end of Robeson's channel), and there planted the little American flag which Commodore Wilkes carried to the Antarctic regions, and, after accompanying De Haven, Kane, Hayes and Hall's northern expeditions, is now a sacred relic among the Arctic treasures of our Geographical Society.

On the 28th of August, 1854, the *Advance* being still imprisoned in the ice, and provisions running short, Dr. Hayes and eight men, by permission of the Commander, left the brig with the design of reaching the nearest Greenland settlement to procure relief for those left behind. After proceeding to a little south of Booth's bay, the new-formed ice barred, September 28th, their further progress. Here they built a hut and remained in this dreary region for two months among the Esquimaux. The expedition proving a failure, and their sufferings becoming almost unendurable, they decided to return to the brig, which they reached in the middle of the Arctic night, December 12, 1854, covered with rime and snow, their energies broken, faint with hunger (having long lived on frozen seal and walrus meat) and almost perishing with cold, the thermometer being 50° below zero. The graphic record of the almost incredible privations and hardships of this perilous journey is given by Dr. Hayes in his volume entitled, "An Arctic Boat Journey," published in 1860. The *Advance*, being finally abandoned, May 17, 1855, her crew, after a successful pilgrimage of eighty-one days, reached Upernavik, August 6th, and a month later embarked in a Danish vessel for their homes.

In this second Grinnell expedition Dr. Hayes had not only distinguished himself by his professional skill and efficiency, but had exhibited that intrepidity and enthusiasm which eminently entitled him to receive the mantle of Dr. Kane, who died in 1857, as his successor in Arctic exploration.

On Dr. Hayes' return in 1855 he immediately began to stir up public curiosity and scientific interest in Polar research. He firmly

believed in the existence of an Open Polar Sea (his faith in which was not shaken to the day of his death), and he resolved to organize a new expedition for its exploration. In 1857 and again in 1858 he presented his views to the American Geographical Society in able papers, entitled "Polar Discoveries of Dr. Kane, and a Plan for Further Research," which he followed up by lectures at the Smithsonian Institution at Washington and throughout the Northern States. These efforts stimulated scientific societies, both in Europe and America, to contribute funds, which were largely increased by private subscriptions, the most munificent of which was made by that merchant prince—Henry Grinnell—once President of this society.

Dr. Hayes set sail from Boston July 6th, 1860, in the schooner *United States*, with ample supplies and a crew of fourteen officers and men. Upon arriving at the northern Greenland settlements, his equipment was increased by two Danish sailors, four Esquimaux hunters (including Hans Christian, his old shipmate in the *Advance*), and a team of excellent dogs. After considerable detention, the schooner entered Smith Sound August 27th, where she was severely buffeted by the storms, but finally found shelter in a small bay, subsequently named Port Foulke. Frustrated in his attempts to force a passage across the Sound to Grinnell Land, and the new ice forming around his schooner, Dr. Hayes decided to winter in this little snug harbor he had discovered. The vessel was now unloaded and converted into a very comfortable dwelling, while the hunters furnished an ample supply of reindeer, rabbit and fox-meat. During the long Arctic winter the Doctor deeply studied the nature and formation of the glaciers and icebergs which surrounded him, thereby adding much to the scientific investigations already made by De Saussure, Rendu, Tyndall, Agassiz, Forbes and others, showing that : "The iceberg is the *discharge* of the Arctic river, the Arctic river is the glacier and the glacier is the accumulation of the frozen vapors of the air." The crew at the same time had plenty of agreeable occupation in pleasant books and amusements, the publication of a clever weekly newspaper, hunting game, which abounded, training dogs for spring excursions, watching bear fights on the ice, and often gazing upon the gorgeous and sublime spectacle of the sky during the Arctic night.

The most splendid and impressive of these auroral displays occurred on the night of January 6th, 1861, the brilliant description of which we give in the Doctor's own expressive language. He says :

"The darkness was so profound as to be oppressive. Suddenly, from the rear of the black cloud which obscured the horizon, flashed a bright ray; but before one could say 'Behold!' the 'jaws of darkness did devour it up.' Presently an arch of many colors fixed itself across the sky, like a bridge for the armies of the Unseen, and the aurora gradually developed. The space within the arch was filled by the black cloud, but its borders brightened steadily, though the rays discharged from it were exceedingly capricious—now glaring like a vast conflagration, now beaming like the glow of a summer morn. More and more intense grew the light, until from irregular bursts it matured into an almost uniform sheet of radiance. Towards the end of the display its character changed. The heavenly dome was all aflame. Lurid fires flung their awful potents across it, before which the stars grew pale and seemed to recede farther and farther from the earth. The gentle Andromeda seemed to fly from the scene of warfare; even Perseus, with his brilliant sword and Medusa shield, drew back apace; the Polar Star vanished from the night; and the Great Bear, trusty sentinel of the North, for once abandoned his watch, and followed the fugitive. The color of the light was chiefly red, but every hue had its turn, and sometimes two or three were mingled; blue and yellow steamers shot across the terrible glare, or starting side by side from the wide expanse of the radiant arch, melted into each other and flung a strange shade of emerald over the illuminated landscape. Again this green subdues and overcomes the red; then azure and orange blend in rapid flight; subtle rays of violet pierce through a 'broad flush of yellow,' and the combined streams issue in innumerable tongues of white flame, which mount towards the zenith. Surely it is impossible to gaze upon a scene so various, so unearthly, so wonderful, without a silent recognition of the wisdom and power the great Final Cause ! The emotional side of our nature comes in to strengthen and exalt our reason; our faith quickens; our convictions acquire a new life; our hearts, however cold before, are compelled to pour their passionate raptures into the grateful yet exultant strain, *TE DEUM LAUDAMUS*, —' We praise Thee, O God: we acknowledge Thee to be the Lord!'

The weird forms of countless icebergs, singly and in clusters, loomed above the sea, and around their summits the strange gleam shone as the fires of Vesuvius over the doomed temples of Campania. Upon the mountain tops, along the white surface of the frozen waters, upon the lofty cliffs, the light glowed and grew dim, and glowed again, as if the air were filled with charnel meteors, pulsating with wild inconstancy over some vast illimitable city of the dead. Silent was the scene, yet it practiced a strange deception upon the senses, for the swift flashes seemed followed by unearthly noises, which fell upon the ear like

‘The tread
Of phantoms dread,
With banner, and spear and flame!’”

The Arctic night, which in this latitude lasts more than a third of a year, and to most voyagers, so depressing, was to Dr. Hayes truly exhilarating, if we may judge by his sublime description, which we give at length:

“There is in the Arctic night much that is attractive to the lover of Nature.

“There is in the flashing aurora, in the play of the moonlight upon the hills and icebergs, in the wonderful clearness of the starlight, in the broad expanse of the ice fields, in the lofty grandeur of the mountains and the glaciers, in the naked fierceness of the storms, much that is both sublime and beautiful. But they speak a language of their own—a language rough, rugged and severe.

“Nature is here exposed on a gigantic scale. Out of the glassy sea the cliffs rear their dark fronts and frown grimly over the desolate waste of ice-clad waters. The mountain peaks, glittering in the clear, cold atmosphere, pierce the very heavens, their heads hoary with unnumbered ages. The glaciers pour their crystal torrents into the sea in floods of immeasurable magnitude. The very air, disdaining the gentle softness of other climes, bodies forth a loftier majesty, and seems to fill the universe with a boundless transparency; and the stars pierce it sharply, and the moon fills it with a cold refulgence. There is neither warmth nor coloring underneath this ethereal robe of night. No broad window opens in the East, no gold and crimson curtain falls in the West upon a world clothed in blue and green and purple, melting into one harmonious whole, a

tinted cloak of graceful loveliness. Under the shadow of the eternal night, nature needs no drapery and requires no adornment. The glassy sea, the tall cliff, the lofty mountain, the majestic glacier, do not blend one with the other. Each stands forth alone, clothed only with Solitude. Sable priestess of the Arctic winter, she has wrapped the world in a winding-sheet, and thrown her web and woof over the very face of Nature.

“And I have gone out often into the Arctic night and viewed Nature under varied aspects. I have rejoiced with her in her strength, and communed with her in repose. I have seen the wild burst of her anger, have watched her sportive play, and have beheld her robed in silence. I have walked abroad in the darkness when the winds were roaring through the hills and crashing over the plain. I have strolled along the beach when the only sound that broke the stillness was the dull creaking of the ice-tables, as they rose and fell lazily with the tide. I have wandered far out upon the frozen sea and listened to the voice of the icebergs bewailing their imprisonment; along the glacier, where forms and falls the avalanche; upon the hill top, where the drifting snow, coursing over the rocks, sang its plaintive song; and again I have wandered away to some distant valley where all these sounds were hushed, and the air was still and solemn as the tomb.

“And it is here that the Arctic night is most impressive, where its true spirit is revealed, where its wonders are unloosed to sport and play with the mind’s vague imaginings. The heavens above and the earth beneath reveal only an endless and fathomless quiet. There is nowhere around me evidences of life or motion. I stand alone in the midst of the mighty hills. Their tall crests climb upward, and are lost in the gray vault of the skies. The dark cliffs, standing against their slopes of white, are the steps of a vast amphitheatre. The mind, finding no rest on their bald summits, wanders into space. The moon, weary with long vigil, sinks to her repose. The Pleiades no longer breathe their sweet influences. Cassiopea and Andromeda and Orion, and all the infinite host of unnumbered constellations, fail to infuse one spark of joy into this dead atmosphere. They have lost all their tenderness, and are cold and pulseless. The eye leaves them and returns to earth, and the trembling ear awaits something that will break the oppressive stillness. But

no footfall of living thing reaches it; no wild beast howls through the solitude. There is no cry of bird to enliven the scene; no tree, among whose branches the winds can sigh and moan. The pulsations of my own heart are alone heard in the great void; and as the blood courses through the sensitive organization of the ear, I am oppressed as with discordant sounds. Silence has ceased to be negative. It has become endowed with positive attributes. I seem to hear and see and feel it. It stands forth as a frightful spectre, filling the mind with the overpowering consciousness of universal death—proclaiming the end of all things, and heralding the everlasting future. Its presence is unendurable. I spring from the rock upon which I have been seated, I plant my feet heavily in the snow to banish its awful presence—and the sound rolls through the night and drives away the phantom.

“I have seen no expression on the face of Nature so filled with terror as *THE SILENCE OF THE ARCTIC NIGHT*.”

Upon the termination, February 18th, of this prolonged period of darkness, Dr. Hayes applied himself to the welcome task of preparing for new discoveries. On the 4th of April, with a metallic lifeboat, two dog-sledges and twelve men, he started across the ice for Grinnell Land, but the passage of the Sound, which was covered with high hummocks, pressed up in the wildest confusion, was found to be impassable for the whole party and their sledges, therefore he sent all back to the schooner except three men and fourteen dogs, with which he marched and scrambled over the rugged ice till May 11th, when he reached Cape Hawks, and thence, following the western shore of the Sound, arrived at Cape Frazer on Kennedy channel. On May 16th, with a single companion, travelling with a dog-sledge, he reached the most northern land ever before visited by man, and from a rugged cliff, 800 feet high, surveyed the glorious prospect, no land to the north being visible. He marked the limit of his discoveries by flags and a cairn, in which he enclosed a memorandum, dated May 19, 1861, stating :

“We arrived here after a toilsome march of forty-six days from my winter harbor, near Cape Alexander, at the mouth of Smith Sound. My observations place us in lat. $81^{\circ} 35'$, long. $70^{\circ} 30' W$. Our further progress was stopped by rotten ice and cracks. Kennedy channel appears to expand into the Polar basin; and, satisfied

that it is navigable at least during the months of July, August and September, I go hence to my winter harbor to make another trial to get through Smith Sound with my vessel, after the ice breaks up this summer."

"This record," says Dr. Hayes, "being carefully secured in a small glass vial, which I brought for the purpose, it was deposited beneath the cairn; and then our faces were turned homewards. But I quit the place with reluctance. It possessed a fascination for me, as it was with no ordinary sensations that I contemplated my situation with one solitary companion in that hitherto untrodden desert; while my nearness to the earth's axis, the consciousness of standing upon land far beyond limits of previous observation, the reflections which crossed my mind respecting the vast ocean which lay spread out before me, the thought that these ice-girdled waters might lash the shores of distant islands where dwell human beings of an unknown race, were circumstances calculated to invest the very air with mystery, to deepen the curiosity, and to strengthen the resolution to persevere in my determination to sail upon this sea and to explore its furthest limits; and as I recalled the struggles which had been made to reach this sea,—through the ice and across the ice,—by generations of brave men, it seemed as if the spirits of these Old Worthies came to encourage me, as their experience had already guided me; and I felt that I had within my grasp 'the great and notable thing' which had inspired the zeal of sturdy Frobisher, and that I had achieved the hope of matchless Parry."

The existence of such an open sea, represented on maps as early as 1608, he argues at length, and in conclusion says:

"With the warm flood of the Gulf Stream pouring northward, and keeping the waters of the Polar sea at a temperature above the freezing point, while the winds, blowing as constantly under the Arctic, as under the Tropic sky, and the ceaseless currents of the sea and the tide-flow of the surface, keep the waters ever in movement, it is not possible, as I have before observed, than even any considerable portion of this extensive sea can be frozen over. At no point within the Arctic Circle has there been found an ice-belt extending, either in winter or summer,

more than from fifty to a hundred miles from land. And even in the narrow channels separating the islands of the Parry Archipelago in Baffin bay, in the North Water, and the mouth of Smith Sound,—everywhere, indeed, within the broad area of the Frigid Zone, the waters will not freeze except when sheltered by the land, or when an ice-pack, accumulated by a long continuance of winds from one quarter, affords the same protection. That the sea does not close except when at rest I had abundant reason to know during the late winter; for at all times, as this narrative frequently records, even when the temperature of the air was below the freezing point of mercury, I could hear from the deck of the schooner the roar of the beating waves.”

Hayes now commenced his return journey from Cape Leiber,* and reached his schooner June 3d, after a journey of two months, during which he had travelled 1,300 miles, amidst furious storms and bitter cold, through treacherous snow-drifts and rugged ice-floes, over cragged hummocks and rocky headlands, and against every desperate and appalling obstacle. Of his little forlorn hope, only himself and one companion, with a single dog-sledge, reached the northernmost point, men and animals having fallen by the wayside faint with hunger, exhausted with toil, or stilled in death. But during all these trials the Doctor never desponded, and, cheerful to the last, his only remark, on getting safely back to the schooner, was: “I am somewhat battered and weather-beaten, but a day or so of rest and civilized comfort, the luxury of a wash and a bed, and of a table covered with clean crockery filled with the best of things that my old Swedish cook can turn out, are wonderously rejuvenating, potent as the touch of Hebe to the war-worn Iolas.”

At Port Foulke, Hayes discovered that his vessel's fore-timbers had been seriously injured, that the schooner could not stand the strain and pressure of the heavy ice, and that therefore nothing was to be done but escape from his prison as soon as the sum-

* Lieutenant Greeley, an officer of our Army, now in the Arctic Regions, visited Cape Leiber this summer, climbed the cliff, 2,500 feet high, and had a magnificent view from it of Polaris Promontory, Peterman's Fiord, Bessel's Bay and Lady Franklin Sound. The cavern, entered here by Dr. Hayes, could not be found.

mer's thaw would permit. The swell of the open water having finally reached Port Foulke, the *United States*, July 14th, glided from her comfortable winter quarters, and, after a very successful run, was in Boston harbor, October 23, 1861.

The results of the expedition claimed by Dr. Hayes were:

"1. I have brought my party through without sickness, and have thus shown that the Arctic winter, of itself, breeds neither scurvy or discontent.

"2. I have shown that men may subsist themselves in Smith Sound independent of support from home.

"3. That a self-sustaining colony may be established at Port Foulke, and be made the basis of an extended exploration.

"4. That the exploration of this entire region is practicable from Port Foulke,—having from that starting point pushed my discoveries much beyond those of my predecessors, without any second party in the field to coöperate with me, and under the most adverse circumstances.

"5. That with a reasonable degree of certainty, it is shown that, with a strong vessel, Smith Sound may be navigated and the open sea reached beyond it.

"6. I have shown that the open sea exists."

The full narrative of this Arctic expedition is admirably related by Dr. Hayes in his book published in 1867, entitled "*The Open Polar Sea.*"

At Greenland and Nova Scotia, where he had touched on his return, Dr. Hayes received the startling intelligence that his native land was engaged in civil war and the Union threatened with dissolution. Instantly he abandoned his purpose of undertaking a new expedition, and "closed as well the cruise as the project, by writing a letter to the President asking for immediate employment in the public service and offering his schooner to the Government for a gunboat." His vessel proving to be too small for efficient war purposes, the Doctor at once joined the medical staff of the army. The celebrated "Satterly Hospital," at West Philadelphia, with ample accommodations for 4,000 patients, was constructed according to his plans, and during the war, through most of which he was there in command, 30,000 patients received medical treatment in this hospital. For his zealous services he received the brevet of Lieutenant-Colonel.

When the Rebellion had terminated, Dr. Hayes, with unabated ardor for Polar exploration, was again desirous to try fresh fields and dangers new. He firmly believed that after passing an ice-belt along the land about latitude 83° the Pole could readily be reached through an open, not a frozen, sea. Hayes always ridiculed Sir George Nares' idea of a "palæocrystic sea," he contending that water, being a restless object, such an extensive area of it could not possibly be frozen over, "deep sea water throughout the world being rarely below 40° Fahrenheit." With this firm belief Hayes hoped that the northern coasts of Greenland and Grinnell Land would be fully explored, the ice-belt be crossed, and the American flag be planted at the Pole before another country should step in to reap the glory. Therefore it was that he said in his lecture on "The Progress of Arctic Discovery," delivered November 12th, 1868, before the American Geographical Society: "I am no less earnest than formerly for the opportunity to conduct the expedition that would accomplish these results myself, and once more try conclusions with my old foe the Smith Sound ice."

It was in this learned lecture that he traced the progress from ancient to modern geography, when exploration was so revived among the Italians, Spaniards and Portuguese, sending De Gama around the Cape of Good Hope, Andreada to China and Columbus to a new world. The whole ocean was swarming with adventurers when the Pope issued his famous bull generously donating the Eastern Hemisphere to the Portuguese and the Western to the Spaniards. Other nations thinking, as the King of France said, "it something strange the Lord should have forgotten them all in his will," disregarded the bull of partition, boldly pushed into every unknown sea, and finally took up the pursuit of a northern route to the Indies, which has since led to so many Polar explorations.

Failing to obtain the means for organizing another Arctic expedition, Hayes, in 1869, joined the artist Bradford in the steam-yacht *Panther* on an excursion to Greenland; and while his friend was obtaining materials for his easel, he was laboriously occupied in geographical and scientific pursuits. Following the western coast of Greenland from Cape Farewell to the ice-pack of Melville bay, Hayes visited most of the Norsemen settlements made in the tenth to the fifteenth centuries, from Ericsfiord, upon which Eric

the Red had planted his first colony in 986, of which the ruins were still visible, to Upernavik, the last outpost of civilization. These Friseland settlements contain most of the inhabitants of Greenland, whose total population is less than 10,000, though its area equals about one-third of that of all Europe. Greenland is truly the Land of Desolation, the whole interior being a howling wilderness of rock and mountain covered with perpetual snow and ice, from which are formed its vast and terrible glaciers. One of these near the head of Smith Sound, called by Kane the "Great Humboldt Glacier," is sixty miles wide, its lower end, forming an ice-cliff, in places five hundred feet above the sea and extends below into it to a depth of nearly half a mile. The flow of such a glacier is like a mighty frozen Niagara, with irresistible force leaping precipices, climbing acclivities, sweeping down valleys, crushing every obstacle in its path, carrying off huge boulders, roaring sometimes with a voice of thunder, slowly making its majestic march and at last plunging into the ocean. Being lighter than sea-water, the submerged end becomes forcibly buoyed up and broken off into huge masses forming floating icebergs, one of which Dr. Hayes measured and describes as three and a half miles in circumference, more than a quarter of a mile deep and of cubical contents beyond the carrying capacity of all the ships in the world. To the study of the glaciers and icebergs of Greenland, the birthplace of nearly all in the northern hemisphere, Dr. Hayes gave much time and greatly added to what was previously known of their formation and movements. His poetic description of an iceberg as follows :

"Solemn, stately and erect, in tempest and in calm, it rides the deep. The restless waves resound through its broken archways and thunder against its adamantean walls. Clouds, impenetrable as those which shielded the graceful form of Arethusa, clothe it in the morning; under the bright blaze of the noonday sun it is armored in glittering silver; it robes itself in the gorgeous colors of evening; and in the silent night the heavenly orbs are mirrored in its glassy surface. Drifting snows whirl over it in the winter, and the sea-gulls swarm round it in the summer. The last rays of departing day linger upon its lofty spires; and when the long darkness is past it catches the first gleam of the returning light, and its gilded dome heralds the coming morn. The Elements combine to render tribute

to its matchless beauty. Its loud voice is wafted to the shore, and the earth rolls it from crag to crag among the echoing hills. The sun steals through the veil of radiant fountains which flutter over it in the summer winds, and the rainbow on its pallid cheek betrays the warm kiss. The air crowns it with wreaths of soft vapor, and the waters around it take the hues of the emerald and the sapphire. In fulfillment of its destiny it moves steadily onward in its blue pathway, through the varying seasons and under the changeful skies. Slowly as, in ages long gone by, it arose from the broad waters, so does it sink back into them. It is indeed a noble symbol of the Law,—a monument of Time's slow changes, more ancient than the Egyptian Pyramids or the obelisk of Heliopolis. Its crystals were dew drops and snowflakes long before the human race was born in Eden."

The year after his return from Greenland the Council of the American Geographical Society recommended Dr. Hayes for the command of the projected new Arctic expedition which the President of the United States subsequently bestowed upon Captain Hall, who, after a flattering reception by this society, set sail July 3, 1871, in the *Polaris*, himself never to return. He rests at the foot of the wild crags of Polaris Promontory, surrounded by the snow-covered peaks and uplands, the solitudes of which he was the first to throw open to the gaze of civilized man.

Dr. Hayes, in 1874, went to Iceland to be present on the thousandth anniversary of the foundation of the Norse Republic. After an enthusiastic reception of Christian IX., the King of Denmark, in the harbor of Reykjavik it was celebrated with imposing ceremonies, in the grand and frightful valley of Thingvalla, the holy ground of Iceland as described in the Sagas, where Christianity was established in the year 1000. This

Land of volcano and of fire,
Of icy mountains, deserts hoar,
Of roaring floods, and earthquakes dire,
And legendary lore,

to an enthusiastic American like Dr. Hayes must have had peculiar attractions, not only because of the physical contests of nature there so manifested ; but it was from these jagged, black, surf-beaten, lava-rock shores that the daring Norse Vikings boldly ventured into un-

known seas to discover Greenland, and thence sailed to these more genial climes, nearly five hundred years before Columbus planted the banner of Spain upon American soil.

Of this Iceland Millennial he gave an account to this Society at its Norse meeting, held November 23, 1874. Besides this report and many lectures delivered before this society, Dr. Hayes made appropriate addresses on various occasions, particularly at the memorial meeting on the death of Dr. Livingstone, and on the receptions of the *Polaris*' crew, Dom Pedro of Brazil, Earl of Dufferin, and Lieutenant Schwatka of our army. His last lecture, which precedes this biographical sketch, will doubtless be read with great interest and profit, not only by the members of this Society but by many of the residents of this commercial city, the causes of whose prosperity he has so accurately and historically traced.

For nearly a quarter of a century Dr. Hayes was a valued member of this Society ; since 1876 one of its council ; and stood ever ready by tongue and pen to render efficient assistance to our Association. Abroad, his worth and services were no less recognized than at home. The Royal Geographical Society of London, the Paris Geographical Society, and the British Government each gave him a gold medal for his Explorations in the Polar Seas ; the Victoria Silver Medal was awarded him "for Arctic Discoveries ;" and the Emperor Maximilian, of Mexico, decorated him with the Cross of the Legion of Honor.

Dr. Hayes, besides being a distinguished explorer, was a brilliant author, having published several very interesting and valuable volumes, to some of which we have already alluded, recording his thrilling adventures, geographical discoveries and scientific observations. These works are entitled : "An Arctic Boat Journey ;" "The Open Polar Sea ;" "Cast Away in the Cold ;" and "The Land of Desolation." Besides these books, he has written some of a lighter character, many magazine articles, popular discourses and learned lectures, not only on geographical and scientific subjects but on commercial, hydrographic, political and literary themes.

During the closing years of his life, Dr. Hayes having no longer a vent for his active mind and restless energy in seeking yet undiscovered lands and seas, entered the treacherous arena of politics. Being a staunch and zealous Republican, a popular and magnetic

man, and withal a fluent debater and learned in legislation, he was elected to the House of Representatives of the State of New York from the Seventh Assembly District of this city, taking his seat in Albany in 1876, and every year thereafter till his death. Upon his renomination for the present year he declined, doubtless feeling that his course in the Legislature, particularly during the last session had not entirely satisfied many of his constituents. Though he had thus made enemies, he had troops of warm, admiring friends, who felt that he was a courageous leader and possessed the essential qualities for success. Without a vocation, he again took to lecturing, and, less than a fortnight before his death, delivered one of his most brilliant and instructive addresses on "Polar Exploration" to a crowded assembly in Chickering Hall. He always talked well, wrote better, and lectured best, for he was master of his subject, quick-witted, nervous in style, full of facts, picturesque in description, eloquent in diction, and, with a fiery energy in manner and speech, carried captive his entire auditory. In his death, the geographical world has lost one of its brightest lights, physical science one of its faithful laborers, and this Society a member zealously devoted to its highest advancement in fulfilling the objects of its organization.